10. ASBESTOS

10.1 Introduction

Asbestos is a naturally occurring mineral which is distinguished by its crystalline form consisting of long, thin, thread-like fibers. There are two groups of asbestos minerals -- serpentine and amphibole. The serpentine group consists of only one mineral -- chrysotile, which accounts for 95% of the asbestos found in buildings in the U.S. The amphibole group consists of five minerals: amosite ("brown asbestos," the second most common), crocidolite ("blue asbestos"), anthophyllite, tremolite, and actinolite (the last three are extremely rare).

Asbestos has been used commercially in the U.S. since the early 1900s. Asbestos found widespread popularity because it is noncombustible and corrosion-resistant and has high tensile strength and low electrical conductivity. Asbestos has been mixed with various binders to create over 3,000 different commercial products. U.S. consumption of asbestos peaked at 800,000 tons in the early 1970s. Since then consumption has steeply plummeted due to concerns of potential health hazards and ensuing liability. Although in 1989 EPA banned the importing, manufacturing, and processing of asbestos over a period of seven years, much of the asbestos originally installed in buildings may still be present. The EPA categories of asbestos-containing materials (ACM) are shown in the text box.

The potential for an ACM to pose a health problem depends on its friability. A friable ACM means that the material can be crumbled with hand pressure, and therefore is likely to release fibers. The primary route of entry of asbestos fibers into the human body is inhalation. Inhalation of airborne asbestos fibers can result in a noncancerous respiratory disease called asbestosis, which consists of scarring of lung tissue accompanied by shortness of breath. Asbestos is known for causing cancer, especially lung cancer and mesothelioma (a cancer of the thin membrane lining of the chest and abdomen). Thus, friable asbestos is listed as a CERCLA hazardous substance (40 CFR 302, Table 302.4) with a Reportable Quantity of one pound.

EPA Categories of Asbestos-Containing Materials (ACM)

- Surfacing materials -- ACM sprayed or troweled on surfaces (such as walls, ceilings, structural members) for acoustical, decorative, or fireproofing purposes. This category includes plaster and insulation.
- Thermal system insulation -- ACM used to inhibit heat transfer or prevent condensation on pipes, boilers, tanks, ducts, and various other components of hot and cold fluid systems and heating, ventilation, and air conditioning (HVAC) systems. This category includes pipe lagging and pipe wrap; block, batt, and blanket insulation; cements and "muds;" and a variety of other products such as gaskets and "ropes."
- Miscellaneous materials -- Other, largely nonfriable products and materials such as floor tile, ceiling tile, and cement pipe.

As a result of the health hazard concerns, EPA began regulating asbestos under the National Emission Standards for Hazardous Air Pollutants (under the Clean Air Act) in 1971. The Occupational Safety and Health Administration (OSHA) issued a standard of 2 fibers/cubic centimeter for asbestos exposure in 1972 that was tightened to 0.2 fibers/cubic centimeter in 1986. In 1977, the Consumer Product Safety Commission prohibited asbestos in consumer patching compounds. In 1986, Congress passed the Asbestos Hazard Emergency Response Act (AHERA), amending TSCA, to regulate the inspection of all schools; implementation of response actions; and establishment of operations and maintenance and training programs.

In 1990, Congress enacted the Asbestos School Hazard Abatement Reauthorization Act (ASHARA), again amending TSCA; it extends the AHERA regulations (see 59 FR 5236 of February 3, 1994) on training and accreditation to persons performing asbestos work on public and commercial buildings. TSCA Section 202(10) defines a public or commercial building as "any

building which is not a school building, except that the term does not include any residential apartment building of fewer than 10 units." Thus, the requirement to use AHERA-accredited personnel applies to virtually all DOE facilities.

DOE EH-413 has produced an Information Brief on asbestos entitled, *Regulatory Requirements Affecting the Disposal of Asbestos-Containing Waste.* DOE field elements should be aware that not only can asbestos be present within buildings but that there may also be asbestos disposal sites on their property. For example, Nevada Test Site has received low-level radioactive, nonfriable asbestos waste from Fernald for disposal. Savannah River Site, Los Alamos National Laboratory, and a few other DOE sites dispose of nonradioactive and low-level radioactive asbestos onsite.

10.2 Drivers for the Requirements

There are several mandates that drive the need to comply with requirements with respect to asbestos in real property transfers. The GSA regulations are the primary driver for singling out asbestos for separate additional consideration. The GSA regulations are found at 41 CFR 101-47.202-2(b)(9) & 41 CFR 101-47.304-13. CERCLA § 120(h) implemented via EPA regulations at 40 CFR Part 373 and BLM regulations at 43 CFR 2372.1 all apply to friable asbestos.

10.3 Requirements in Real Property Transfers

The GSA regulations require a complete record survey of all buildings and facilities to determine (1) the type, location, and condition of ACM; (2) measures to control the asbestos (e.g., an asbestos operations and maintenance plan); and (3) costs and time necessary to remove all or portions of ACM. However, satisfying the GSA requirement for a survey of buildings and facilities only partially satisfies the other requirements regarding asbestos (see Exhibit 10-1).

Compliance with CERCLA § 120(h)(4) and (5) calls for an investigation of friable asbestos, regardless of whether it is in buildings or in the ground. CERCLA § 120(h)(1), (3), (4), and (5) require identification of uncontaminated parcels of land (see § 10.4.3), notification of leases (see § 10.8), reporting data on deeds (see § 10.11), and placing a covenant in deeds (see § 10.11). BLM requires identification of contaminated parcels in withdrawn land being returned to the public domain and a statement of the extent to which decontamination has taken place or will take place (see § 10.9).

One issue that must be addressed is the threshold quantity. As mentioned in § 6.3, this quantity was not defined for the purposes of implementing CERCLA § 120(h)(4) and (5). Thus, in § 6.3 it was strongly recommended that the threshold quantities for implementing CERCLA § 120(h)(4) and (5) be consistent with those established by EPA in 40 CFR Part 373 for CERCLA § 120(h)(1). However, this recommendation is not suitable for ACM because it would not be protective of human health in light of the OSHA standard of 0.2 fibers/cubic centimeter. The potential to create an environment of 0.2 fibers/cubic centimeter is present wherever there is any damaged ACM inside a building intended for human occupancy. Therefore, it is argued that the threshold quantity for ACM, for the purposes of implementing CERCLA § 120(h)(4) and (5), should be replaced by the presence of any damaged ACM inside a building intended for human occupancy. Damaged ACM can be determined by a records

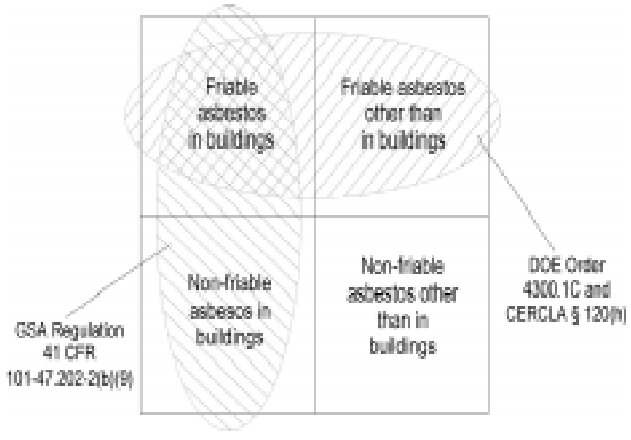

Exhibit 10-1. Domains of Asbestos Requirements with Respect to Real Property

search, but it must be updated by inspection. The threshold quantities for friable asbestos in all other places should be the same as for CERCLA § 120(h)(1) and (3): storage of 1,000 or more kilograms for one or more years and the release or disposal of one or more pounds.

10.4 Data Gathering

10.4.1 Records

The easiest way to comply with the GSA requirements is first to determine the age of each building or facility. As a rule-of-thumb, buildings or facilities constructed after 1990 do not contain ACM. For older buildings and facilities, conduct a records search with the objective of locating an asbestos survey and inspection report for each building or facility on the property. There may be a comprehensive survey and report covering all buildings and facilities. Such a survey or surveys should be recent (i.e., within the last few years) and should have been conducted by an AHERA-accredited inspector. Before 1990, it was a best management practice to utilize an AHERA-accredited inspector; it is now a mandatory practice due to ASHARA.

You will also need to conduct a search of records to ascertain whether 1,000 or more kilograms of friable asbestos have been stored for one or more years, or if one or more pounds of friable asbestos have been disposed of or otherwise released on the property. "Stored" means the holding of friable asbestos for a temporary period, at the end of which the friable asbestos is used, disposed of, or stored elsewhere (40 CFR 373.4). Because releases of one or more pounds of friable asbestos must be reported to the National Response Center and to the DOE Headquarters Emergency Operations Center (DOE Order O 232.1), searches of records should include DOE Occurrence Notification Reports. You need this information to fulfill the CERCLA § 120(h)(1) and (3) requirements (see § 10.11 below).

10.4.2 Inspection

It is a best management practice to have an AHERA-accredited inspector conduct a survey of all buildings and facilities to determine the type, location, and condition of all ACM. Although GSA does not require an actual physical survey, CERCLA § 120(h) requires information on friable asbestos, which cannot be determined without an actual inspection of the condition of the asbestos. An AHERA-accredited inspector is trained and experienced to recognize the most likely places in a building or facility where ACM would be used, identify trade names associated with ACM, assess the condition (friable, non-friable) of any ACM or suspected ACM, assign one of the seven categories (see Exhibit 10-2) of damaged asbestos-containing building material (ACBM) or damaged suspected ACBM, and employ proper sampling protocols (see *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surface Materials*).

Positive identification of asbestos requires laboratory analysis of samples. Standard laboratory analysis using polarized light microscopy is the most inexpensive. A better but much more expensive laboratory analysis uses transmission electron microscopy, which can distinguish extremely thin asbestos from nonasbestos fibers. You should receive the results of the inspection and laboratory analyses in a report (see text box).

An asbestos inspection and laboratory analysis report should contain the following:

- A list of identified homogeneous areas classified by type of material (surfacing, thermal system insulation, or miscellaneous).
- The location of homogeneous sampling areas and individual sampling areas, and the location of both friable and non-friable suspected ACM with the sampling dates.
- Approximate square or linear footage of any area sampled for suspected ACM.
- A copy of the laboratory analyses for each bulk sample and conclusion as to the presence of asbestos in each area sampled. The sampling dates must be included.
- The physical assessment of ACBM and suspected ACBM and assignment of one the seven categories of damaged ACBM or suspected ACBM (see Exhibit 10-2).

Exhibit 10-2. Seven Categories of Damaged ACBM and the Required Responses

Damage Type	Definition	Required Response
Damaged or significantly damaged thermal insulation	Insulation has lost structural integrity, or its covering (in whole or part) is crushed, gouged, water-damaged, with ends exposed such that (1) it is not able to contain fibers and/or (2) debris is present.	• As a minimum, repair damage • Remove damaged material • Maintain asbestos thermal system insulation intact
Damaged friable surface material	Material which has deteriorated or sustained physical injury such that the cohesion is inadequate; it has delaminated so that its bond to the substrate is inadequate; or it is flaked, has suffered physical impact, or is covered with debris.	• Encapsulate, enclose, and/or remove
Significantly damaged friable surface material	Surfacing material is extensively and severely damaged friable in a functional space.	• Isolate if needed to protect health • Encapsulate, enclose, and/or remove
Damaged miscellaneous materials or significantly damaged miscellaneous materials	Material with inadequate cohesion or adhesion properties, as illustrated by flaking, separation in layers, blistering, or crumbling.	• Encapsulate, enclose, and/or remove
	Damage is extensive and severe.	• Isolate if needed to protect health • Encapsulate, enclose, and/or remove
Potential damage	Friable ACBM in area regularly used by building occupants and there is reasonable likelihood that the material will become damaged, deteriorated, or delaminated.	• Prepare an Operations & Maintenance Plan • Take preventive measures • Remove as appropriate
Significant potential damage	Friable ACBM in area regularly used by building occupants where there is reasonable likelihood of damage and where material is subject to continuing disturbance (from air erosion, vibration, accessibility, etc.).	• Prepare an Operations & Maintenance Plan • Take preventive measures • Remove
Any remaining friable ACBM	Any friable ACBM not covered above	• Response action not defined • Prepare an Operations & Maintenance Plan, encapsulate, enclose, and/or remove

Furthermore, ask the AHERA-accredited inspector to provide estimates of the costs and time necessary for AHERA-accredited personnel to remove all or part of the ACM in order to comply with the GSA requirement. AHERA-accredited personnel are not required for work on asbestos-containing roofing or siding that are on the exterior of a building (59 FR 5238.)

10.4.3 Identification of Contaminated and Uncontaminated Parcels

In addition to asbestos within buildings, friable asbestos contamination on the property may be present. Investigate the origin of any fill dirt that has been brought onto the property to ascertain whether the dirt originated from a contaminated site. If any structures have been demolished on the property, find out whether the structures were demolished in place and fill dirt compacted over them because the demolition debris may contain friable asbestos. Check analogous situations for debris from remodeling. Identify any asbestos disposal sites on the property. By this process, you or the AHERA-accredited inspector can make an identification of parcels of land contaminated by friable asbestos as well as parcels of land uncontaminated by friable asbestos.

Assuming that the presence of damaged ACM inside buildings, the storage of 1,000 or more kilograms of friable asbestos for one or more years, or the release or disposal of one or more pounds of friable asbestos into the ground or water signifies contamination, you can identify parcels of contaminated land. You can use this identification to satisfy BLM requirements (see § 10.9). Using the inverse of the same criteria, you can identify parcels of land uncontaminated by friable asbestos to satisfy CERCLA § 120(h)(4) for facilities being closed. The identification of parcels of land uncontaminated by friable asbestos, as with the other hazardous substances, hazardous wastes, and petroleum products, is subject to concurrence by EPA for sites on the National Priorities List or by the appropriate state for all other sites.

EPA's ability to concur with the identification of uncontaminated parcels will depend on the information available concerning the current and historical uses of the parcel, the proximity of the parcel to sources of contamination requiring response actions, and the nature of the threat, if any, reasonably associated with the type of activity or contamination associated with the parcel (see EPA, 1994).

10.5 Relationship to Environmental Baseline Survey

Be sure that information gathered about the presence of friable asbestos on a facility appears in an environmental baseline survey (see Chapter 12). You may conduct part of or the entire environmental baseline survey yourself. If you conduct your own environmental baseline survey, it is recommended that you follow ASTM E-1528-93 Standard, "Standard Practice for Environmental Site Assessments: Transaction Screen Process." Alternatively, you may have an environmental professional, such as an environmental auditor, conduct the assessment in accordance with ASTM E-1527-94 Standard, "Standard Practice for Environmental Site Assessments: Phase I Environment Site Assessment Process."

10.6 Relationship to Occupational Safety and Health Baseline Survey

Be sure that information gathered about the presence of friable asbestos in a building also appears in the occupational safety and health baseline survey for the property. Workers with responsibilities for building maintenance, repair, alteration, construction, and installation (including electrical, telephone, heating, ventilation, air conditioning, and plumbing lines) are subject to two Occupational Safety and Health Administration (OSHA) standards. One is the OSHA Construction Industry Standard for Asbestos found at 29 CFR 1926.58, and the other is the OSHA Respiratory Protection Standard found at 29 CFR 1910.134.

10.7 Relationship to NEPA Documents

A NEPA document prepared for a proposed real property transfer must address the existence of friable asbestos. Friable asbestos could be an issue if (1) it is the subject of a remediation or removal

action to be completed for the real property transfer, (2) there is a change in the status of ACM (e.g., demolition or remodeling) when the property is transferred, or (3) the public or stakeholders express a concern about ACM (for example, during a scoping meeting or as a comment).

10.8 Leases and Other Outgrants

You may use the following features as signs of contamination: (1) damaged ACM inside buildings (see Exhibit 10-2), or (2) the release or disposal of one or more pounds of friable asbestos into the ground or water. Using these features, you can designate parcels of contaminated land. Notify the appropriate state official(s) of any lease of DOE real property on which there has been asbestos contamination if the lease encumbers the property beyond the date of termination of operations on the property. Make the notification before entering into the lease and include information on the length of the lease, name of the lessee(s), and the uses allowed by the lease. This notification is required by CERCLA § 120(h)(5).

Although not required, it is a best management practice to notify the lessees, occupants, or tenants of the locations of ACM and make available copies of asbestos surveys, inspection and analysis reports, and asbestos operations and maintenance plans.

10.9 Notice of Intention to Relinquish

If the real property being declared excess is withdrawn land, the Notice of Intention to Relinquish to be prepared and submitted to the Bureau of Land Management must include any information on the extent of contamination and measures that have been taken or will be taken for decontamination. As explained in § 1.6.2, contamination is one of the 13 items that must be addressed, although there is no specific standard form for providing the information.

10.10 GSA-Specific Requirements

GSA requires that the following information be attached to the Standard Form 118 (Appendix A) for the real property being declared excess: (1) the type, location, and condition of asbestos, (2) asbestos control measures (e.g., an asbestos operations and maintenance plan), and (3) costs and time required for asbestos abatement. In addition, if asbestos is present on the real property, GSA requires that the disposal agency (itself or DOE, as the case may be) insert into the Invitation for Bids/Offers to Purchase a Notice of the Presence of Asbestos. The exact wording of the Notice, as prescribed in 41 CFR 101-47.304-13, is as follows:

NOTICE OF THE PRESENCE OF ASBESTOS--WARNING

(a) The Purchaser is warned that the property offered for sale contains asbestos-containing materials. Unprotected or unregulated exposures to asbestos in product manufacturing, shipyard, and building construction workplaces have been associated with asbestos-related diseases. Both the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) regulate asbestos because of the potential hazards associated with exposure to airborne asbestos fibers. Both OSHA and EPA have determined that such exposure increases the risk of asbestos-related diseases, which include certain cancers and which can result in disability or death.

(b) Bidders (Offerors) are invited, urged, and cautioned to inspect the property to be sold prior to submitting a bid (offer). More particularly, bidders (offerors) are invited, urged, and cautioned to inspect the property as to its asbestos content and condition and any hazardous or environmental conditions relating thereto. The disposal agency will assist bidders (offerors) in obtaining any authorization(s) which may be required in order to carry out any such inspection(s). Bidders (offerors) shall be deemed to have relied solely on their own judgment in assessing the overall condition of all or any portion of the property including, without limitation, any asbestos hazards or concerns.

(c) No warranties either expressed or implied are given with regard to the condition of

the property including, without limitation, whether the property does or does not contain asbestos or is or is not safe for a particular purpose. The failure of any bidder (offeror) to inspect, or to be fully informed as to the condition of all or any portion of the property offered will not constitute grounds for any claim or demand for adjustment or withdrawal of a bid or offer after its opening or tender.

(d) The description of the property set forth in the Invitation for Bids (Offer to Purchase) and any other information provided therein with respect to said property is based on the best information available to the disposal agency and is believed to be correct, but an error or omission, including but not limited to the omission of any information available to the agency having custody over the property and/or any other Federal agency, shall not constitute grounds or reason for nonperformance of the contract of sale, or any claim by the Purchaser against the Government including, without limitation, any claim for allowance, refund, or deduction from the purchase price.

(e) The Government assumes no liability for damages for personal injury, illness, disability or death, to the Purchaser, or to the Purchaser's successors, assigns, employees, invitees, or any other person subject to Purchaser's control or direction, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with asbestos on the property which is the subject of this sale, whether the Purchaser, its successors or assigns has or have properly warned or failed properly to warn the individual(s) injured.

(f) The Purchaser further agrees that in its use and occupancy of the property it will comply with all Federal, state, and local laws relating to asbestos.

10.11 Requirements for the Contract and Deed

If 1,000 or more kilograms of friable asbestos have been stored for one or more years, or if one or more pounds of friable asbestos have been disposed of or otherwise released on DOE property, 40 CFR 373.3 and CERCLA § 120(h)(1) and (3) state that you must report the following information in the contract (for sale, lease, or other transfer) and deed for the disposed property:

(1) Name of the hazardous substance (i.e., friable asbestos) and regulatory synonym (i.e., asbestos); and the Chemical Abstracts Service Registry Number (i.e., 1332-21-4).

(2) Quantity (in kilograms and pounds) of the friable asbestos stored for one or more years, or known to have been disposed or released on the property.

(3) Dates on which friable asbestos storage, release, or disposal occurred.

(4) Description of remedial action (if any). [This description is not required by 40 CFR Part 373 but is by CERCLA § 120(h)(3)(A)(i)(III) to be put in the deed only.]

(5) The following statement: "The information contained in this notice is required under the authority of regulations promulgated under section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") 42 U.S.C. section 9620(h)." [This statement is not required by CERCLA § 120(h)(1) or (3) but by 40 CFR 373.3 to be put on the contract (for sale, lease, or other transfer only).]

In addition, you must attach a covenant to the property deed (not required for leases) if the property is not being transferred to a potentially responsible party with respect to the real property.

The covenant must warrant the following pursuant to CERCLA § 120(h)(3)(A)(ii) and (iii):

(1) All remedial action necessary to protect human health and the environment from friable asbestos remaining on the property has been taken before the date of the property transfer. (Note: all remedial action has been considered taken if the construction and installation of an approved remedial design has been completed and the remedy has been demonstrated to EPA to be operating properly and successfully. The carrying out of long-term pumping and treating, or operation and maintenance, after the remedy has been demonstrated to EPA to be operating properly and successfully does not preclude the property transfer.)

(2) Any additional remedial action found to be necessary after the date of property transfer shall be conducted by the United States.

(3) Permission granting the United States access to the real property in any case in which remedial or corrective action is found to be necessary after the property transfer.

See § 14.3.4 for how paragraph (1) above of the covenant statement may be deferred under CERCLA § 120(h)(3)(C).

10.12 Checklist

- ☐ Is there any asbestos on the real property? (If not, stop here.)
- ☐ What is the type, location, and condition (friable, non-friable) of each individual ACM item or homogeneous ACM area for each building or facility?
- ☐ Have materials suspected of containing asbestos been sampled and analyzed?
- ☐ Have all individual and homogeneous sampling areas suspected or confirmed as ACBM been assessed and assigned one of the seven categories of damage?
- ☐ Have the friable asbestos data gathered on the real property been included in the environmental baseline survey?
- ☐ If friable asbestos is an issue in an environmental assessment or environmental impact statement, have the friable asbestos data gathered on the real property been included?
- ☐ If the real property is being offered for lease, have the appropriate state officials been notified as described in § 10.8?
- ☐ If the real property is being offered for lease, license, or permit (see glossary), will the tenants and occupants be informed about the presence and location of friable asbestos and equipment with friable asbestos as a best management practice?
- ☐ If the real property being declared excess is withdrawn land, have data on the extent of contamination and decontamination measures been included in the Notice of Intention to Relinquish to the Bureau of Land Management?
- ☐ If the real property is being declared excess or is a return of withdrawn land rejected by BLM, have the data on the type, location, and condition of asbestos been attached to Standard Form 118?
- ☐ If the surplus real property is offered for disposal, has a Notice of the Presence of Asbestos been included in the Invitation for Bids/Offers to Purchase?
- ☐ Have the friable asbestos data gathered on the real property and the 40 CFR 373.3 information statement and the covenant been included in the contract (for sale, lease, or other transfer) and deed as described in § 10.11?

10.13 References

ASTM, 1994. "Standard Practice For Environmental Site Assessments: Phase I Environmental Site Assessment Process," American Society for Testing and Materials Standard E-1527-94, June 1994.

ASTM, 1993. "Standard Practice for Environmental Site Assessments: Transaction Screen Process," American Society for Testing and Materials Standard E-1528-93, May 1993.

DOE, 1995. *Regulatory Requirements Affecting the Disposal of Asbestos-Containing Waste*, EH-413-062/1195, U.S. Department of Energy, Office of Environmental Policy and Assistance, RCRA/CERCLA Division, EH-412, November 1995.

EPA, 1994. "Military Base Closures: Guidance on EPA Concurrence in the Identification of Uncontaminated Parcels Under CERCLA § 120(h)(4)," Memorandum from Elliott P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response to Waste Management Directors (Regions I-X), Regional Counsels (Regions I-X), and the Federal Facilities Leadership Council, April 19, 1994.

EPA, 1988. *Asbestos-In-Schools: A Guide to New Federal Requirements for Local Education Agencies*, U.S. Environmental Protection Agency, Office of Toxic Substances, February 1995.

EPA, 1988. *Asbestos Waste Management Guidance*, EPA/530-SW-85-007, U.S. Environmental Protection Agency, U.S. Environmental Protection Agency, Office of Solid Waste, May 1986.

EPA, 1985. *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surface Materials*, EPA/5-85-030a, U.S. Environmental Protection Agency, October 1985.

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